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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,157	09/26/2006	Ian Alastair Kirk	ZQ120/07001	7042
22884	7590	09/03/2010	EXAMINER	
MIDDLETON & REUTLINGER 2500 BROWN & WILLIAMSON TOWER LOUISVILLE, KY 40202			FULLER, ROBERT EDWARD	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/594,157	Applicant(s) KIRK ET AL.	
	Examiner ROBERT E. FULLER	Art Unit 3676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,5,7-10,13-37 and 40-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5,7-10,13-37 and 40-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 September 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicant's submission, filed July 28, 2010, has been carefully considered. Examiner has withdrawn the rejection under 35 U.S.C. 112 set forth in the previous Office Action, but has added a drawing objection. Examiner has set forth new set forth new grounds of rejection in response to the claim amendments.

Drawings

2. The drawings are objected to because the sectional views are not provided with cross-hatching—see MPEP 608.02 IX, and 37 CFR 1.84(h)(3). Specifically, Figs. 11, 14, 22, and 23 should be provided with cross-hatching. Also, numerals "9h" (Fig. 5) and "9l" (Fig. 11) are not described in the specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and

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informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
4. Claims 1, 2, 7-10, 13-33, 35-37, and 40-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buttolph (US 2,589,534) in view of DeBray et al. (US 6,032,748).

With regard to claims 1, 35, 36, 44, and 45, Buttolph discloses an apparatus for mobilizing drill cuttings in a well, the apparatus comprising a sleeve (13), at least one vane (28) provided on the sleeve, the sleeve having a bearing region (i.e. its outer surface proximate numeral 41), at least one bushing (14) that is rotatably mounted on the bearing region of the sleeve, at least two blades (51) mounted on the bushing, the at

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least two blades defining at least one fluid conduit between adjacent blades, the blades and vane being rotatable relative to one another (column 5, lines 64-71).

Buttolph discloses the wear sleeve being threadedly connected to the drill string, and fails to disclose the sleeve being split along at least one side, such that it clamps around the drill string.

DeBray et al. disclose an apparatus similar to that of Buttolph, having a wear sleeve (26) clamped around a drill string, the sleeve also having a bearing region on which a bushing (50) is rotatably mounted.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified Buttolph such that the sleeve was split and clamped around the drill pipe, rather than threadedly attached, in order to enable the sleeve to be connected to the drill pipe "at most any location along the string" (DeBray et al., column 4, lines 26-28), rather than being constrained to only the areas which had threads.

With further regard to claim 35, in the combination of Buttolph and DeBray et al., the apparatus is clamped to the tubular by virtue of the sleeve itself being a clamp. With further regard to claim 45, Buttolph discloses an annular clamp (i.e. upper collar 11).

With regard to claims 2 and 37, since Buttolph discloses vanes and blades which are relatively rotatable, then Buttolph's apparatus will create a pressure difference in a fluid flowing past the vanes and blades.

With regard to claims 7, 9, 29, and 30, Buttolph discloses the vanes being parallel to the axis of rotation, while the blades are offset from the axis. Therefore,

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Buttolph fails to disclose the blades being parallel and vanes being offset. Buttolph also fails to disclose the specific angle of offset. Furthermore, Buttolph fails to disclose the vanes and blades being offset in opposite directions.

It would have been considered obvious to modify Buttolph to offset the vanes, rather than the blades, as this would have amounted to the mere reversal of the parts of Buttolph. It also would have been considered obvious to offset the vanes and blades in opposite directions, as this type of configuration was well known for creating upward thrust and turbulence in the wellbore, and therefore would have yielded predictable results. See Yancey for example, which shows offset vanes and parallel blades. See also US 2,352,412 to Sandstone, which shows oppositely offset vanes and blades. Finally, it would have been considered obvious to offset the blades of Buttolph by 3-10 degrees, as it has been held that discovering an optimum value of a result effective variable (i.e. the offset angle) involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

With regard to claim 8, Buttolph's blades extend helically (see Fig. 5).

With regard to claim 10, Buttolph discloses an annular clamp (i.e. upper collar 11) around the outside of the sleeve (i.e. in close proximity of the outside) and engaging an outer surface of the sleeve (i.e. the upper annular shoulder surface—see Fig. 5).

With regard to claims 13, 14, 40, and 41, in combination, Buttolph and DeBray et al. teach the vanes rotating with the drill string (as the wear sleeve in DeBray et al. is tightly clamped to the drill string via bushings 16 and 18).

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With regard to claims 15-19, 27, 28, and 31-33, Buttolph fails to disclose the claimed shapes of the blades and vanes. However, these shapes are all well known, as shown by US 4,676,716 and US 3,882,946 (asymmetrical foil-shaped blades), US 6,056,073 (scooped, concave vanes), and US 5,074,356 (sinusoidal vanes). It would have been considered obvious to one of ordinary skill to have used anyone of the claimed blade/vane shapes, as this would have been a matter of simple substitution of one known configuration for another.

With regard to claim 20, Buttolph discloses a rigid bushing, since it is made of metal.

With regard to claim 21, Buttolph's sleeve is annular, and accommodates a tubular (10).

With regard to claim 22, Buttolph's vanes are integral (see Fig. 5).

With regard to claims 23 and 25, Buttolph shows both the vanes and blades being integral with the sleeve and the bushing, respectively. However, it would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have made the vanes and blades of Buttolph separable and modular, rather than integral, to increase the ease of repair of the device, and because it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. *Nerwin v. Erlichman*, 168 USPQ 177, 179.

With regard to claim 24, Buttolph's blades are integral with the bushing (see Fig. 5).

With regard to claim 26, Buttolph's vanes are parallel to the axis of rotation (see Fig. 5).

With regard to claim 42, Buttolph's blades (51) centralize the sleeve within the wellbore (see Figs. 1-3).

With regard to claim 43, Buttolph discloses the bushing being a solid sleeve, rather than a clamp. However, DeBray et al. disclose the bushing (50) being split and clamped around the sleeve (26).

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Buttolph in view of DeBray et al. as applied to claim 1 above, and further in view of Yancey (US 2,794,617).

Buttolph in view of DeBray et al. fails to disclose blades that extend farther than the vanes.

Yancey discloses blades (56) which are rotatable relative to vanes (42), and the blades extend farther than the vanes (see Fig. 2).

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have extended the blades of Buttolph past the vanes, as Yancey discloses that this type of configuration was well known in the art and would have yielded predictable results.

6. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Buttolph in view of DeBray et al. as applied to claim 1 above, and further in view of Shizawa (JP62101149).

Buttolph in view of DeBray et al. fails to disclose the blades comprising a notch.

Shizawa discloses a mixing/agitating device having a blade (14) comprising multiple notches (13).

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have provided the blades of Buttolph in view of DeBray et al. with notches, as Shizawa states that "turbulences and divisions are generated by the flow caused by respective notches and blades...to mix and agitate the fluids more effectively" (see Shizawa Abstract).

Response to Arguments

7. Applicant's arguments with respect to claims 1, 35, 36, 44, and 45 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT E. FULLER whose telephone number is (571)272-6300. The examiner can normally be reached on Monday thru Friday from 8:00 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shane Bomar can be reached on 571-272-7026. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Shane Bomar/
Supervisory Patent Examiner, Art
Unit 3676

08/31/2010
/R.E.F./